(1a) $3(1-2x)-4(1-x)=x-2(1+x)$

$3-6x-4+4x=x-2-2x$

$-6x+4x-x+2x=-2-3+4$

$-x=-1$

$\boxed{x=1}$

(1b) $-(2x+4)-(3x-1)=3\left(x+\frac{1}{4}\right)$

$-2x-4-3x+1=3x+\frac{3}{4}$

$\frac{-8x}{4}-\frac{16}{4}-\frac{12x}{4}+\frac{4}{4}=\frac{12x}{4}+\frac{3}{4}$

$-8x-16-12x+4=12x+3$

$-8x-12x-12x=3+16-4$

$-32x=15$

$x=\frac{15}{-32}$; $\boxed{x=\frac{-15}{32}}$

(1c) $\frac{2(x-2)}{3}+\frac{3(1-x)}{2}=1$

$\frac{2x-4}{3}+\frac{3-3x}{2}=1$

$\frac{4x-8}{6}+\frac{9-9x}{6}=\frac{6}{6}$

$4x-8+9-9x=6$

$4x-9x=6+8-9$

$-5x=5$

$x=\frac{5}{-5}$; $\boxed{x=-1}$

(1d) $\frac{x-5}{9} - \frac{4-2x}{2} = 8 - \frac{8x}{2}$

$\frac{2x-10}{18} - \frac{36-18x}{18} = \frac{144}{18} - \frac{72x}{18}$

$2x - 10 - 36 + 18x = 144 - 72x$

$2x + 18x + 72x = 144 + 10 + 36$

$92x = 190$

$x = \frac{190}{92}$; $\boxed{x = \frac{95}{46}}$

(2a) $14x^2 - 28 = 0$

FORMA 1: Despejando

$14x^2 = 28$

$x^2 = \frac{28}{14}$

$x^2 = 2$

$x = \pm\sqrt{2}$

$\boxed{\begin{array}{l} x_1 = +\sqrt{2} \\ x_2 = -\sqrt{2} \end{array}}$

FORMA 2 : Fórmula

$a = 14$
$b = 0$
$c = -28$

$x = \pm\sqrt{\frac{-c}{a}}$

$x = \pm\sqrt{\frac{-(-28)}{14}}$

$x = \pm\sqrt{\frac{28}{14}}$; $x = \pm\sqrt{2}$

(2b) $\frac{(x-1)^2}{2} - \frac{3-4x}{4} = \frac{5+4x}{4}$

$\frac{x^2-2x+1}{2} - \frac{3-4x}{4} = \frac{5+4x}{4}$; $\frac{2x^2-4x+2}{4} - \frac{3-4x}{4} = \frac{5+4x}{4}$

$2x^2 - 4x + 2 - 3 + 4x = 5 + 4x$; $2x^2 - 4x - 6 = 0$ $\begin{cases} a = 2 \\ b = -4 \\ c = -6 \end{cases}$

$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4 \cdot 2 \cdot (-6)}}{2 \cdot 2} = \frac{4 \pm \sqrt{16 + 48}}{4} =$

$= \frac{4 \pm \sqrt{64}}{4}$ $\begin{cases} \frac{4+8}{4} = 3 \rightarrow \boxed{x_1 = 3} \\ \frac{4-8}{4} = -1 \rightarrow \boxed{x_2 = -1} \end{cases}$

(2c) $2x^2 - 6x = 6x^2 - 8x$

$6x^2 - 2x^2 - 8x + 6x = 0$

$4x^2 - 2x = 0$

FORMA 1 (factor común)

$2x(2x-1) = 0$

$2x = 0 \longrightarrow \boxed{x_1 = 0}$

$2x - 1 = 0 \longrightarrow \boxed{x_2 = \frac{1}{2}}$

FORMA 2 (fórmula)

$4x^2 - 2x = 0$

$a = 4$, $b = -2$, $c = 0$ $\Rightarrow \boxed{x_1 = 0}$

$x_2 = \frac{-b}{a}$

$\boxed{x_2 = \frac{-(-2)}{4} = \frac{1}{2}}$

(2d) $(4x-1)(2x+3) = (x+3)(x-1)$

$8x^2 + 12x - 2x - 3 = x^2 - x + 3x - 3$

$x^2 - 8x^2 - x + 3x - 12x + 2x = -3 + 3$

$-7x^2 - 8x = 0$

$x(-7x-8) = 0$ $\begin{cases} \boxed{x_1 = 0} \\ x_2 \Rightarrow -7x - 8 = 0 \; ; \; \boxed{x_2 = \frac{-8}{7}} \end{cases}$

(3) x: número de vecinos del edificio

$\frac{x}{6} + \frac{x}{4} + \frac{x}{5} + \left(\frac{x}{3} + 9\right) = x$

m.c.m. $\begin{cases} 6 = 2 \cdot 3 \\ 4 = 2^2 \\ 5 = 5 \\ 3 = 3 \end{cases} \Big\rangle \; 2^2 \cdot 3 \cdot 5 = 60$

$\frac{10x}{60} + \frac{15x}{60} + \frac{12x}{60} + \frac{20x}{60} + \frac{540}{60} = \frac{60x}{60}$

$10x + 15x + 12x + 20x - 60x = -540$

$-3x = -540$

$x = \frac{-540}{-3}$; $\boxed{x = 180}$

(4) x: edad de una persona

$$x^2 - 3x = 9x$$

$$x^2 - 3x - 9x = 0$$

$$x^2 - 12x = 0 \quad \longrightarrow \quad \begin{cases} a = 1 \\ b = -12 \\ c = 0 \end{cases}$$

FÓRMULA:

$$x_1 = 0$$

$$x_2 = \frac{-b}{a} = \frac{-(-12)}{1} \rightarrow \boxed{x_2 = 12}$$